IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A voltage controlled oscillator for outputting a signal whose frequency changes in accordance with a value of a control signal, wherein:

the oscillator has an even number of, at least four, amplifiers;

~~the amplifiers~~ each amplifier is a non-differential input type and ~~have~~ has a first input and a second input and a single-ended output, a gain from the first input to its output and that from the second input to its output both having a negative value, and a signal propagation delay time from the first input to its output and that from the second input to its output changing in accordance with a value of the control signal;

each of the first inputs of the amplifiers is connected to one of the outputs of another one of the amplifiers so that they may be formed in a ring; and

each of the second inputs of the amplifiers is connected to one of the outputs of such one of the amplifiers as to be distant by an even number of stages therefrom.

Claim 2 (Original): A voltage controlled oscillator for outputting a signal whose frequency changes in accordance with a value of a control signal, wherein:

the oscillator has first, second, third, and fourth amplifiers;

the first, second, third, and fourth amplifiers each have a first input and a second input, gain from the first input to its output and that from the second input to its output both having a negative value, and signal propagation delay time from the first input to its output and that from the second input to its output changing in accordance with a value of the control signal; and

the output of the first amplifier is connected to the first input of the second amplifier and the second input of the third amplifier, the output of the second amplifier is connected to the first input of the third amplifier and the second input of the fourth amplifier, the output of the third amplifier is connected to the first input of the fourth amplifier and the second input of the first amplifier, and the output of the fourth amplifier is connected to the first input of the first amplifier and the second input of the second amplifier.

Claim 3 (Original): A voltage controlled oscillator for outputting a signal whose frequency changes in accordance with a value of a control signal, wherein:

the oscillator has first, second, third, fourth, fifth, sixth, seventh, and eighth amplifiers;

the first, second, third, fourth, fifth, sixth, seventh, and eighth amplifiers each have a first input and a second input, gain from the first input to its output and that from the second input to its output both having a negative value, and signal propagation delay time from the first input to its output and that from the second input to its output changing in accordance with a value of the control signal; and

the output of the first amplifier is connected to the first input of the second amplifier and the second input of the fifth amplifier, the output of the second amplifier is connected to the first input of the third amplifier and the second input of the sixth amplifier, the output of the third amplifier is connected to the first input of the fourth amplifier and the second input of the seventh amplifier, the output of the fourth amplifier is connected to the first input of the fifth amplifier and the second input of the eighth amplifier, the output of the fifth amplifier is connected to the first input of the sixth amplifier and the second input of the first amplifier, the output of the sixth amplifier is connected to the first input of the seventh

amplifier and the second input of the second amplifier, the output of the seventh amplifier is connected to the first input of the eighth amplifier and the second input of the third amplifier, and the output of the eighth amplifier is connected to the first input of the first amplifier and the second input of the fourth amplifier.

Claim 4 (Original): A voltage controlled oscillator for outputting a signal whose frequency changes in accordance with a value of a control signal, wherein:

an even number of equivalent amplifiers are connected in a ring; and

each of the amplifiers has a minute-signal transfer function containing at least one unstable zero, whose direct-current gain is less than one in absolute value and whose phase characteristic changes in accordance with the value of the control signal.

Claim 5 (Previously Presented): A quadrature modulator with a modulation frequency input and a modulation-subject signal input, for modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency obtained by multiplying a frequency of a modulation frequency signal by a specified multiple, which is a predetermined rational number, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 1, for generating the modulation signals having their phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the modulation frequency input to the specified multiple.

Claim 6 (Previously Presented): A quadrature modulator with a reference frequency input, a modulation-subject signal input, and a modulation frequency specification input, for modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency equal to a frequency obtained by multiplying a frequency of the reference frequency input by a value specified by the modulation frequency specification input, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 1, for generating the modulation signals having phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the reference frequency input to the value specified by the modulation frequency specification input.

Claim 7 (Previously Presented): A quadrature modulator with a modulation frequency input and a modulation-subject signal input, for modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency obtained by multiplying a frequency of a modulation frequency signal by a specified multiple, which is a predetermined rational number, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 2, for generating the modulation signals having their phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the modulation frequency input to the specified multiple.

Claim 8 (Previously Presented): A quadrature modulator with a modulation frequency input and a modulation-subject signal input, for modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency obtained by multiplying a frequency of a modulation frequency signal by a specified multiple, which is a predetermined rational number, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 3, for generating the modulation signals having their phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the modulation frequency input to the specified multiple.

Claim 9 (Previously Presented): A quadrature modulator with a modulation frequency input and a modulation-subject signal input, for modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency obtained by multiplying a frequency of a modulation frequency signal by a specified multiple, which is a predetermined rational number, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 4, for generating the modulation signals having their phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the modulation frequency input to the specified multiple.

Claim 10 (Previously Presented): A quadrature modulator with a reference frequency input, a modulation-subject signal input, and a modulation frequency specification input, for modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency equal to a frequency obtained by multiplying a frequency of the reference frequency input by a value specified by the modulation frequency specification input, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 2, for generating the modulation signals having phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the reference frequency input to the value specified by the modulation frequency specification input.

Claim 11 (Previously Presented): A quadrature modulator with a reference frequency input, a modulation-subject signal input, and a modulation frequency specification input, for

modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency equal to a frequency obtained by multiplying a frequency of the reference frequency input by a value specified by the modulation frequency specification input, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 3, for generating the modulation signals having phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the reference frequency input to the value specified by the modulation frequency specification input.

Claim 12 (Previously Presented): A quadrature modulator with a reference frequency input, a modulation-subject signal input, and a modulation frequency specification input, for modulating a signal applied to the modulation-subject signal input by using modulation signals having phases shifted by 90 degrees from each other, at a frequency equal to a frequency obtained by multiplying a frequency of the reference frequency input by a value specified by the modulation frequency specification input, the quadrature modulator comprising:

a voltage controlled oscillator according to claim 4, for generating the modulation signals having phases shifted by 90 degrees from each other;

means for modulating the modulation-subject signal by using the modulation signals; and

means for equalizing a ratio between a frequency of the modulation signals and that of the reference frequency input to the value specified by the modulation frequency specification input.